

CLAIMS

What is claimed is:

1. A mobile device having an overcurrent cutoff function and at least one function module, the mobile device comprising:

- a main power supply which supplies power to the mobile device;
- a power detection unit which detects whether power from the main power supply to the mobile device is cut off, and generates a power cutoff signal when the power is cut off;
- a backup power supply unit which supplies a backup power to the mobile device when the power from the main power supply to the mobile device is cut off; and
- a control unit which communicates data lines and control signal lines with the at least one function module, and converts potential levels of the data lines and control signal lines connected to the at least one function module to a predetermined potential level in response to the power cutoff signal.

2. The mobile device of claim 1, wherein the control unit comprises:

- a flash ROM which stores application programs to drive the at least one function module;
- a microprocessor driven by the application programs, and which communicates data with the function module and applies an output power of the backup power supply unit to the mobile device in response to the power cutoff signal; and
- a level conversion unit which converts the potential levels of the data lines and control signal lines to the predetermined potential level in response to the power cutoff signal.

3. The mobile device of claim 2, wherein the level conversion unit comprises a switch and a pull-down resistor, wherein the switch is turned on in response to the power cutoff signal.

4. The mobile device of claim 2, wherein the level conversion unit comprises NMOS transistors connected in series between the microprocessor and the function module, and which turn on and off in response to the power cutoff signal.

5. The mobile device of claim 1, wherein the power detection unit comprises:

a slide switch having first, second, and third terminals, wherein the second and third terminals are connected in common;

a first resistor connected between the first terminal and the main power supply; and

a second resistor connected between the third terminal and the ground, wherein a node is connected to the third terminal forming an output terminal for outputting the power cutoff signal.

6. The mobile device of claim 1, wherein the predetermined potential level is a logic “low” or a high-impedance state.

7. The mobile device of claim 1, further comprising a battery cavity having a separation button and a battery pack for the mobile device, wherein when the separation button is pulled in a predetermined direction after the battery pack is engaged with the battery cavity, the battery pack is separated from the mobile device and the power detection unit generates the power cut off signal.

8. An overcurrent control method for a mobile device having at least one function module, the method comprising:

detecting whether a main power supply supplying power to the mobile device is cut off;

converting potential levels of input/output signal lines of the function module to a predetermined potential level according to a result of the detection; and

supplying a backup power to the mobile device.

9. The method of claim 8, wherein the predetermined potential level is a logic “low” or a high-impedance state.

10. A mobile device having an overcurrent cutoff function and at least one function module, the mobile device comprising:

a main power supply unit which supplies power to the mobile device;

a power supply load/unload detection unit which detects a separation of the main power supply unit from the mobile device;

a control unit having application programs and an operating system which runs the application programs or controls the at least one function module;

a memory device which stores temporary data during the execution of the application programs and data resulting from the application program executions by the control unit;

a power control unit which converts the power generated from the main power supply unit into a predetermined voltage and supplies the power to the control unit and the memory device; and

a backup power supply unit which supplies a backup power to the mobile device when the power from the main power supply unit to the mobile device is detached.

11. The mobile device of claim 10, wherein the control unit communicates data lines and control signal lines with the at least one function module

12. The mobile device of claim 11, wherein when the main power supply unit is separated from the mobile device due to external impacts, the power supply load/unload detection unit detects the separation and generates a power cutoff signal to the control unit.

13. The mobile device of claim 12, wherein when the control unit receives the power cutoff signal from the power supply load/unload detection unit, the control unit converts potential levels of the data lines and the control signal lines associated with the at least one function module and generates a backup power supply signal to enable the backup power supply unit to supply power to the mobile device.

14. The mobile device of claim 13, wherein the backup power supply unit comprises:
a backup battery;
a DC/DC converter; and
a switching unit, wherein the backup power supply unit supplies power from the backup battery to the control unit and the memory device based on the switching unit in response to the backup power supply signal.

15. The mobile device of claim 14, wherein the DC/DC converter converts a voltage of the backup battery into a predetermined voltage for the control unit and the memory device.

16. The mobile device of claim 10, wherein the control unit comprises:

a flash ROM which stores application programs to drive the at least one function module;

a microprocessor driven by the application programs, and which communicates data with the at least one function module and applies an output power of the backup power supply unit to the mobile device in response to the power cutoff signal; and

a level conversion unit which converts the potential levels of the data lines and control signal lines to a predetermined potential level in response to the power cutoff signal.

17. The mobile device of claim 16, wherein the level conversion unit comprises a switch and a pull-down resistor, wherein the switch is turned on in response to the power cutoff signal.

18. The mobile device of claim 16, wherein the application programs comprise at least one of schedule management programs, multimedia reproducing/recording programs and communication programs.

19. The mobile device of claim 16, wherein the level conversion unit comprises NMOS transistors connected in series between the microprocessor and the at least one function module and which turn on and off in response to the power cutoff signal.

20. The mobile device of claim 16, wherein the level conversion unit converts the potential levels of the data lines and control signal lines connected between the microprocessor and the at least one function module into a logic "low" or a high-impedance state.

21. The mobile device of claim 16, wherein the backup power supply unit supplies the output power necessary to preserve data stored in the memory device and to maintain a standby state of the control unit.

22. The mobile device of claim 20, wherein the at least one function module is a Code Division Multiple Access module.

23. The mobile device of claim 21, wherein the memory device is a Dynamic Random Access Memory.